REMARKS

Claims 1, 12, 21, 25, 31, 47, and 52 have been amended. Claims 67-83 have been canceled. Claims 84-85 have been added. Claims 1-66 and 84-87 are now pending in this application. Applicant reserves the right to pursue the original claims and other claims in this and other applications. Applicant respectfully requests reconsideration of the above-referenced application in light of the amendments and following remarks.

At the outset, Applicant acknowledges with appreciation that claims 25-30, 32-34, 36-46, and 48-51 are in condition for allowance. Claim 25 has been grammatically edited to maintain proper antecedent basis. Specifically, claim 25 now recites "forming an insulating layer over the photosensitive regions." Claims 35 and 47 depend from claim 25 and should also be allowable along with claim 25.

Applicant acknowledges with appreciation that claim 52 is in condition for allowance if rewritten or amended to overcome the objection. (Office Action, pg. 4). Accordingly, claim 52 was amended to overcome the Examiner's objections. Specifically, claim 52 now recites "of said gate structures."

Claims 12, 21, 24, 31, 35, 47, and 52-66 stand objected to because of informalities. Claims 12, 21, 31, 47, and 52 were amended to overcome the objections in accordance with the Examiner's suggestions. Specifically, in claims 12, 31, and 47, the claims were amended to recite "used as a mask." Claim 21 was amended to properly depend from claim 20 and now has proper antecedent basis. Claim 52 was amended to recite "of said gate structure." Claim 24 depends from claim 12. Claim 35 depends from claim 31. Claims 53-66 depend from claim 52. Accordingly, the objection for claims 12, 21, 24, 31, 35, 47, and 52-66 should be withdrawn.

Claims 1, 2, 4, 5, 7-9, 11-16, 19, 20, and 24 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Chiang. The rejection is respectfully traversed.

The cited reference does not disclose a method of producing an imaging device, comprising: "forming a photosensitive region; forming a diffusion region; forming a gate structure between said photosensitive region and said diffusion region; forming an insulating layer over the photosensitive region, the gate structure and the diffusion region; and removing a first portion of the insulating layer over the diffusion region and a portion over said gate structure, forming at least one spacer adjacent to the diffusion region side of the gate structure, and leaving a second portion of the insulating layer over the photosensitive region and over a portion of said gate structure adjacent to said photosensitive region," as recited in claim 1 (emphasis added).

The present invention relates to forming a spacer insulator layer 88 over at least one gate stack, *e.g.*, a transfer gate stack 76, and a photosensitive region, *e.g.*, photodiode 90 (FIG. 4). A first portion of spacer layer 88 is removed from at least a portion of transfer gate stack 76 to form at least one sidewall spacer 105 on one side of gate stack 76 (FIG. 4). Sidewall spacer 105 of gate stack 76 is formed adjacent to diffusion region 200. At least a second portion of spacer layer 88 remains and covers a part of transfer gate stack 76 and the photosensitive region 90 (FIG. 4). Chiang does not disclose such a method.

Chiang, in contrast, merely relates to forming an insulator layer 8a over only a photodiode element region 7. For example, an insulator layer 8a is formed over a polysilicon gate structure 4 (FIG. 3). A photoresist shape 9 is then applied to pattern and etch insulator layer 8a (FIG. 4). In FIG. 4, lightly-doped n-type region 5 remains exposed. In other words, the insulator layer 8a has been completely removed between the polysilicon gate 4 and photodiode element 7 exposing semiconductor substrate 1.

Insulator layer 8a only remains over the photodiode element 7. Chiang does not teach a diffusion region, much less forming a sidewall spacer adjacent to a diffusion region. Chiang does not teach leaving a second portion of the insulating layer over the photosensitive region and over a portion of the gate structure adjacent to the photosensitive region.

For example, applying Applicant's claimed method yields a structure illustrated in FIG. 8. Spacer layer 88 covers photosensitive region 90 and portions of the gate stack 76 adjacent to the photosensitive region. The semiconductor substrate 70 is not exposed. As such, Chiang does not disclose that "a second portion of the insulating layer [remains] over the photosensitive region and over a portion of said gate structure adjacent to said photosensitive region," as recited in claim 1. Similarly, Chiang does not disclose "forming a gate stack between said photosensitive region and said diffusion region," as recited in claim 1. Chiang merely discloses forming a polysilicon gate 4 between photodiode element 7 and a field oxide region 2 (FIGS. 3-5).

Claims 2, 4, 5, 7-9, 11-16, 19, 20, and 24 depend from claim 1. Claims 2, 4, 5, 7-9, 11-16, 19, 20, and 24 should be allowable along with claim 1 for at least the reasons provided above.

Claims 22 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chiang and further in view of the Examiner's comments. The rejection is respectfully traversed. Claim 22 depends from claim 1 and claim 23 depends from claim 22. Claims 22 and 23 should be allowable along with claim 1 for at least the reasons provided above. Accordingly, the rejection should be withdrawn.

Newly added claim 84 is believed to be in condition for allowance. Claim 84 recites a method of producing an imaging device, comprising: "forming a photosensitive region; forming a diffusion region; forming a gate stack between said photosensitive region and said diffusion region; forming an insulating layer over said photosensitive region, said gate structure and said diffusion region; and forming at least one sidewall spacer on a first side of said gate stack by removing a first portion of said insulating layer, wherein a second portion of said insulating layer continuously covers said photosensitive region and a second side of said gate stack." As indicated above, Chiang does not disclose that a portion of the insulating layer continuously covers the photosensitive region and a side of the gate stack.

Similarly, newly added claim 85 is believed to be in condition for allowance. Chiang does not teach "forming a photosensitive region; forming a gate structure adjacent to said photosensitive region; forming an insulating layer over said photosensitive region and said gate structure; removing a portion of the insulating layer over said gate structure, wherein said removed insulating layer portion exposes a first portion of a top surface of said gate structure, and wherein the remaining portion of said insulating layer covers a second portion of said top surface of said gate structure."

As indicated above, Chiang's insulator layer 8a is completely removed from the top of the polysilicon gate (FIGS. 3-4). In Applicant's FIG. 4, a first portion of the top surface of gate stack 76 is exposed. A second portion of the top surface of gate stack 76 is still covered with insulating layer 88. These features are not disclosed in Chiang.

In view of the above, each of the presently pending claims in this application is believed to be in condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

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